

TABLE BEFORE UPSERT OPERATION

A (primary key)	B
1	1

110

INPUT ROWS

A (primary key)	B
1	2
2	2
3	3
2	4
1	3

CATEGORIZATION OF INPUT ROWS

Optimized UPSERT Operation	Non-Optimized UPSERT Operation
Update	Update
Insert (duplicate)	Insert
Insert	Insert
Insert (duplicate)	Update
Update	Update

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TABLE AFTER OPTIMIZED
UPSERT OPERATION

A (primary key)	B
1	3
2	4
3	3

TABLE AFTER NON-OPTIMIZED
UPSERT OPERATION

A (primary key)	B
1	3
2	4
3	3

FIG. 1
PRIOR ART

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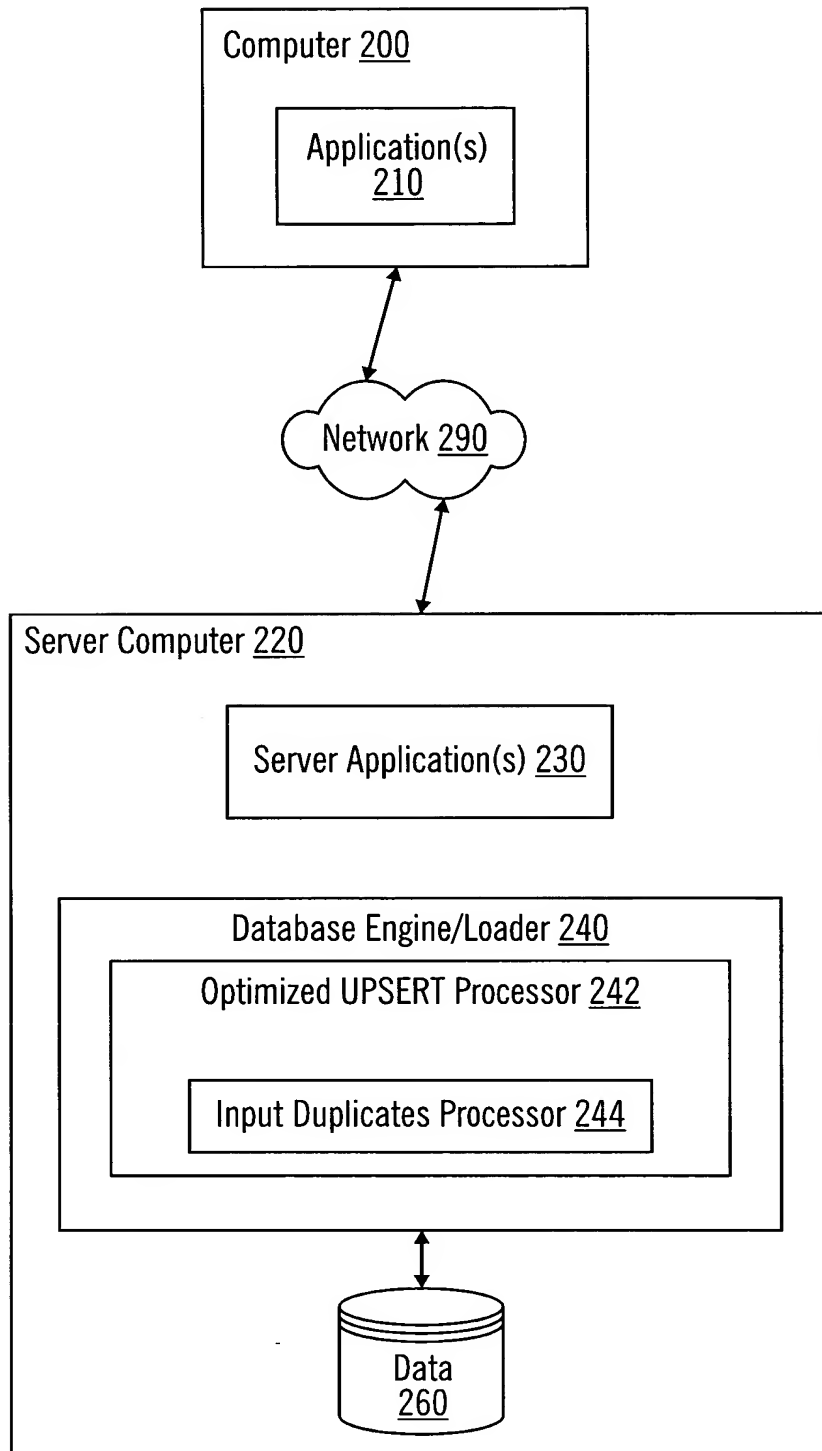


FIG. 2

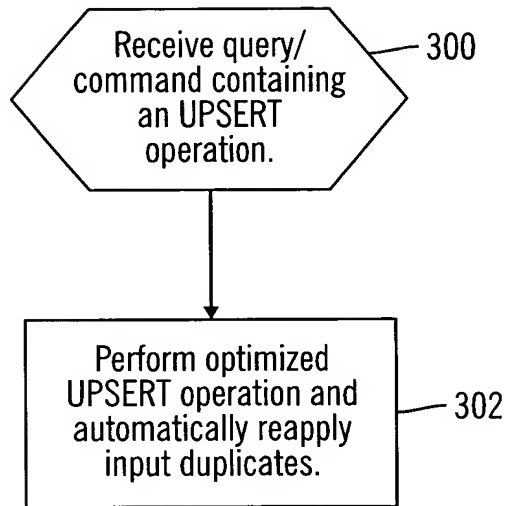


FIG. 3

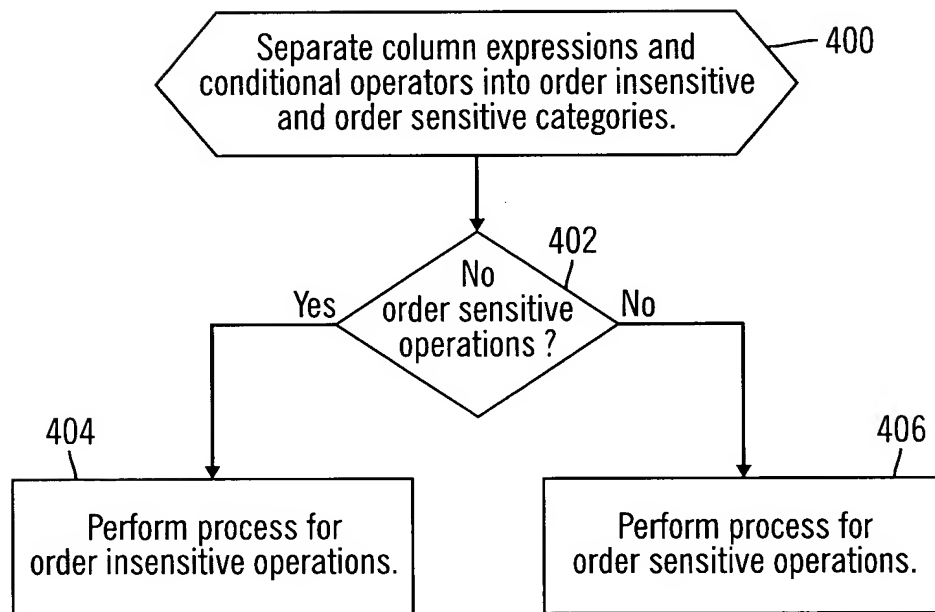


FIG. 4

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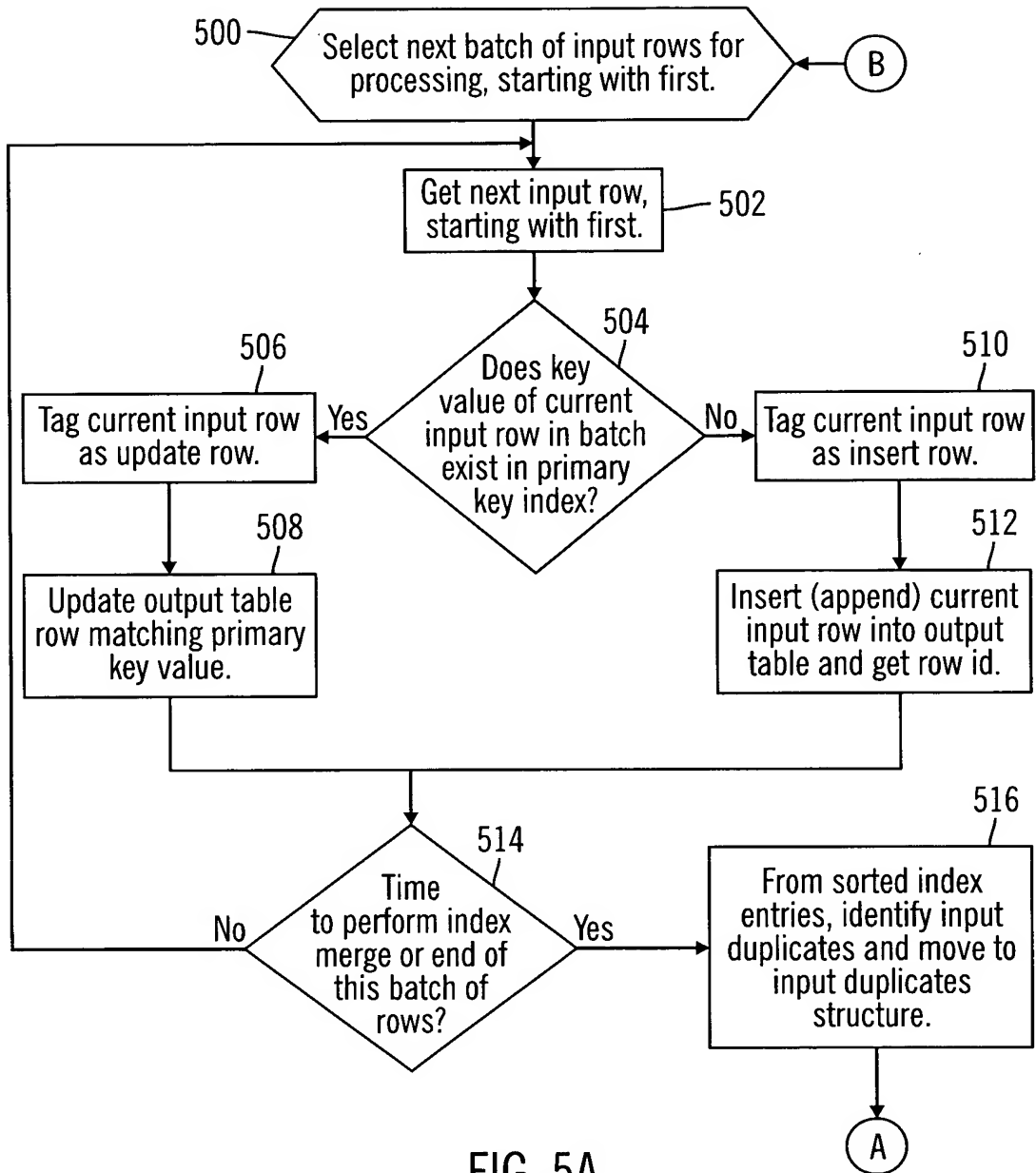


FIG. 5A

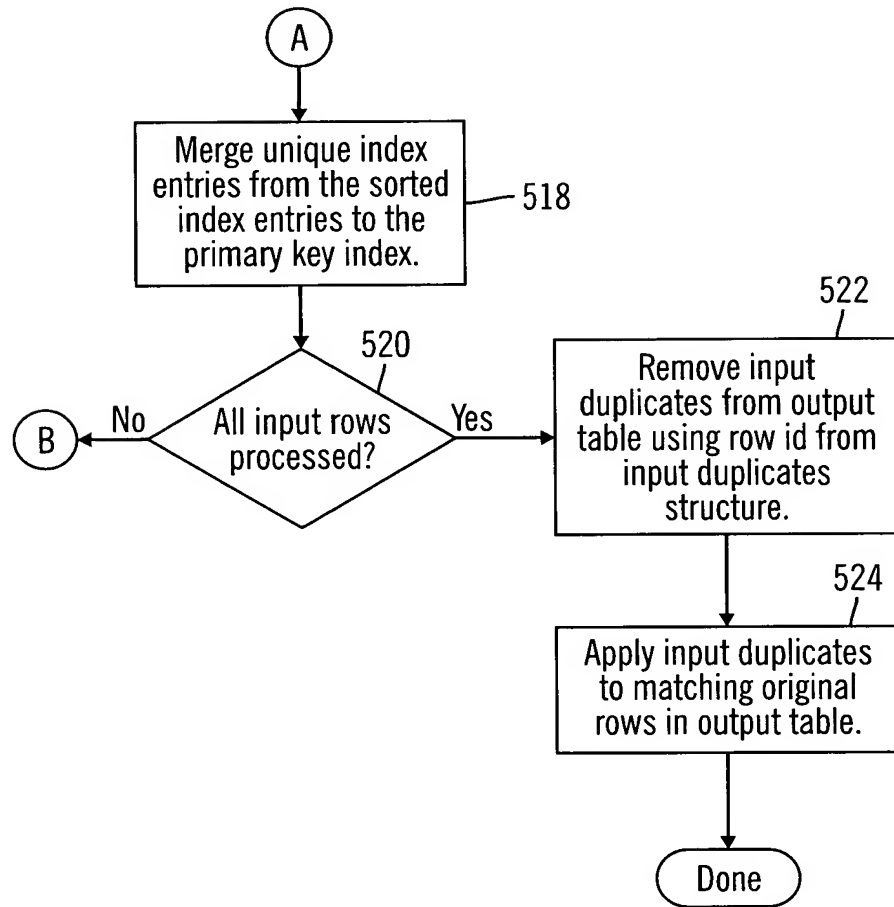


FIG. 5B

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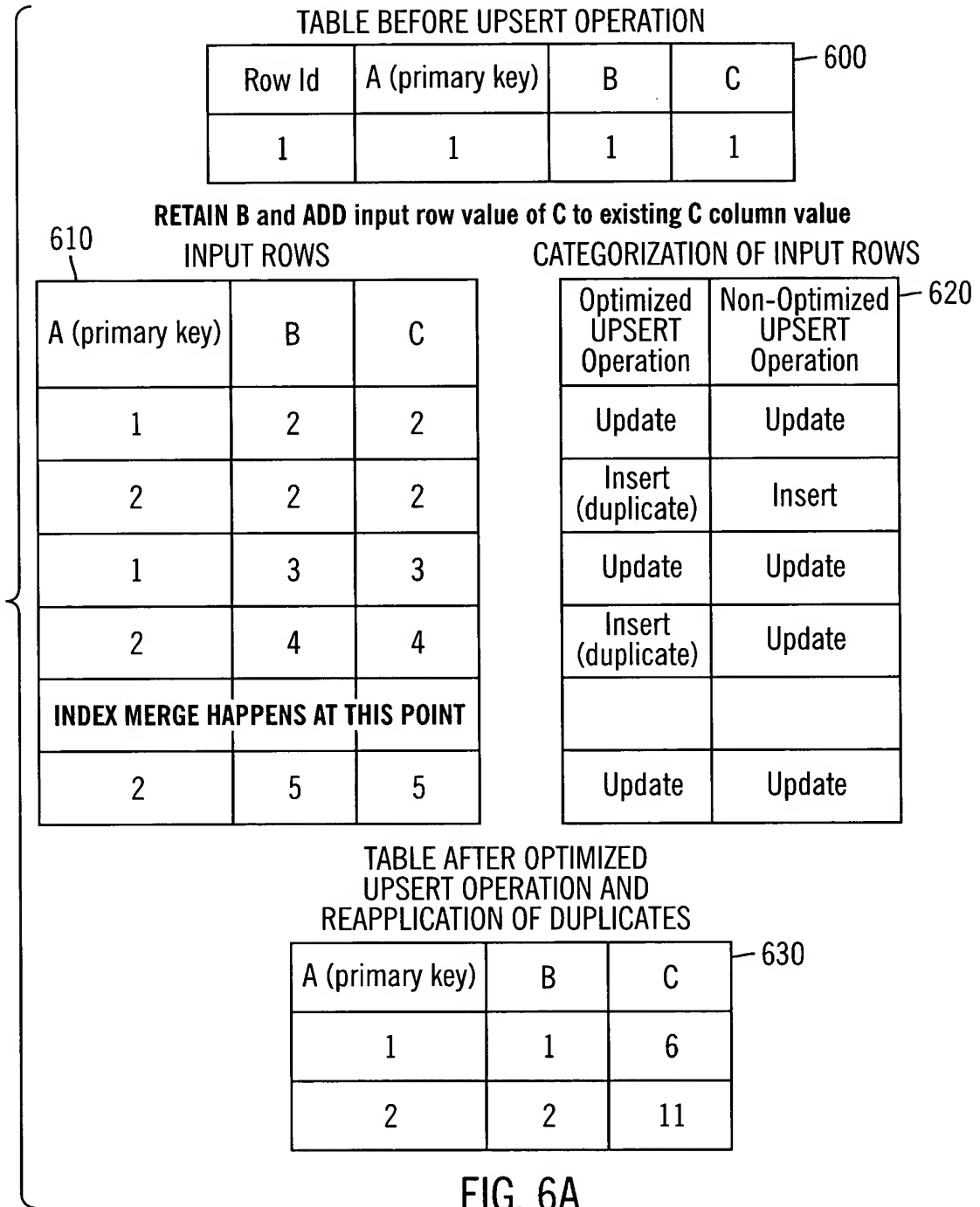


FIG. 6A

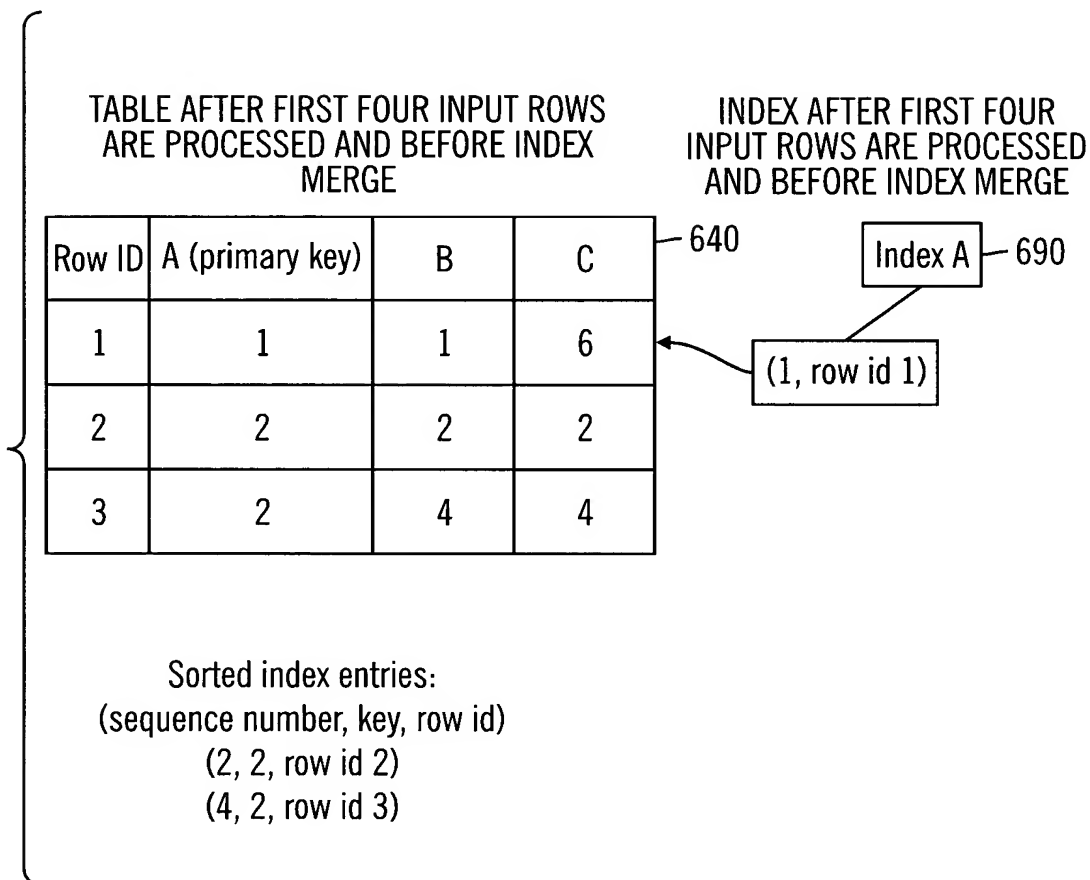


FIG. 6B

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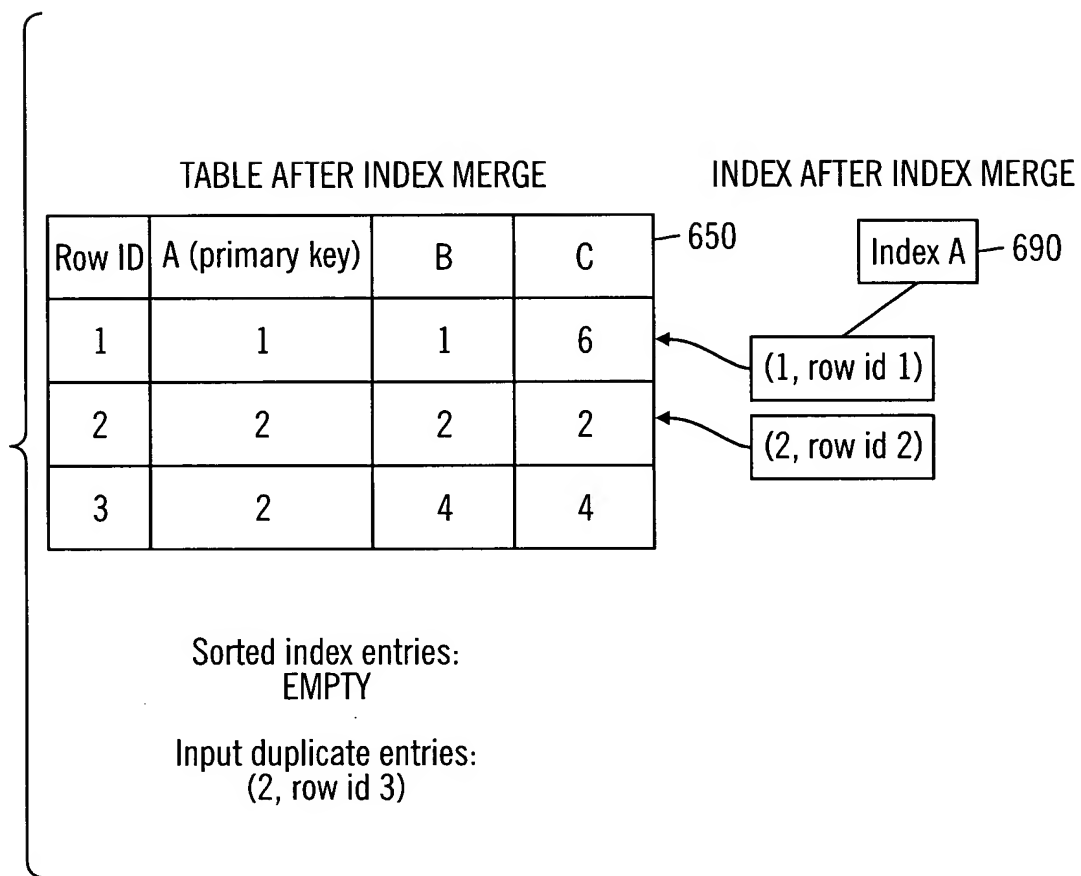


FIG. 6C

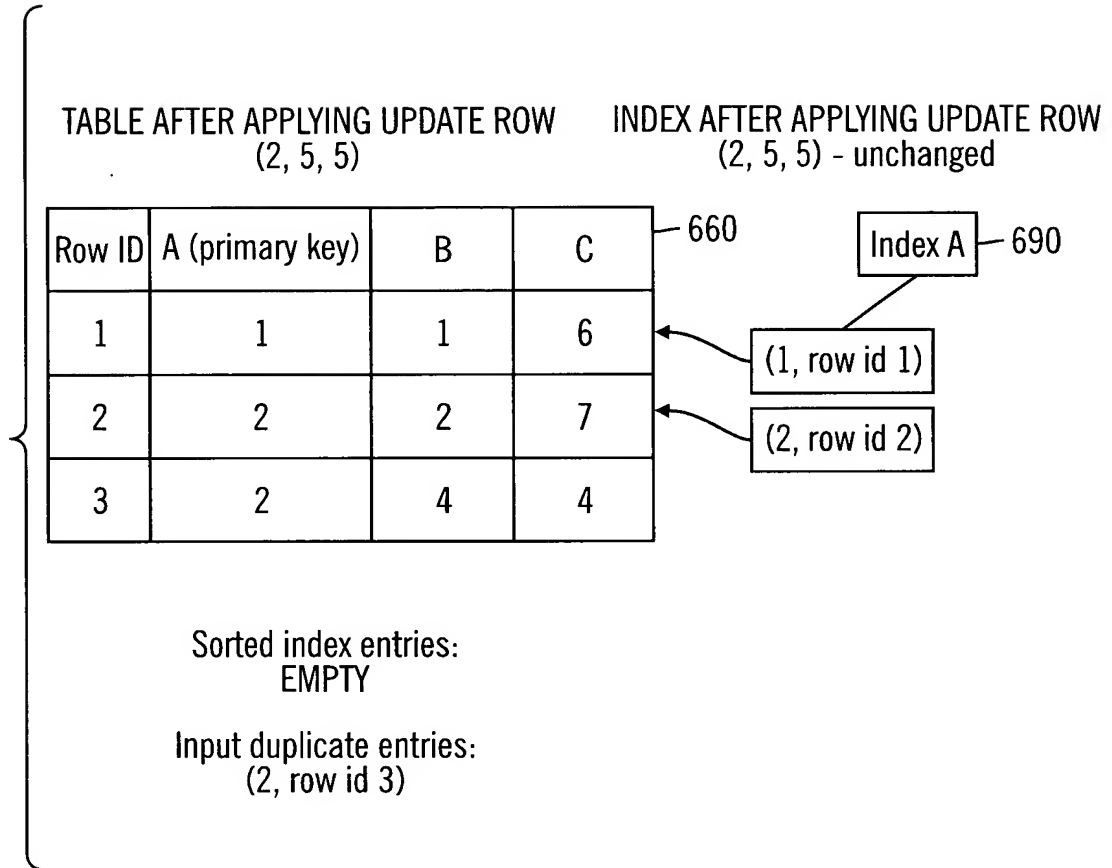


FIG. 6D

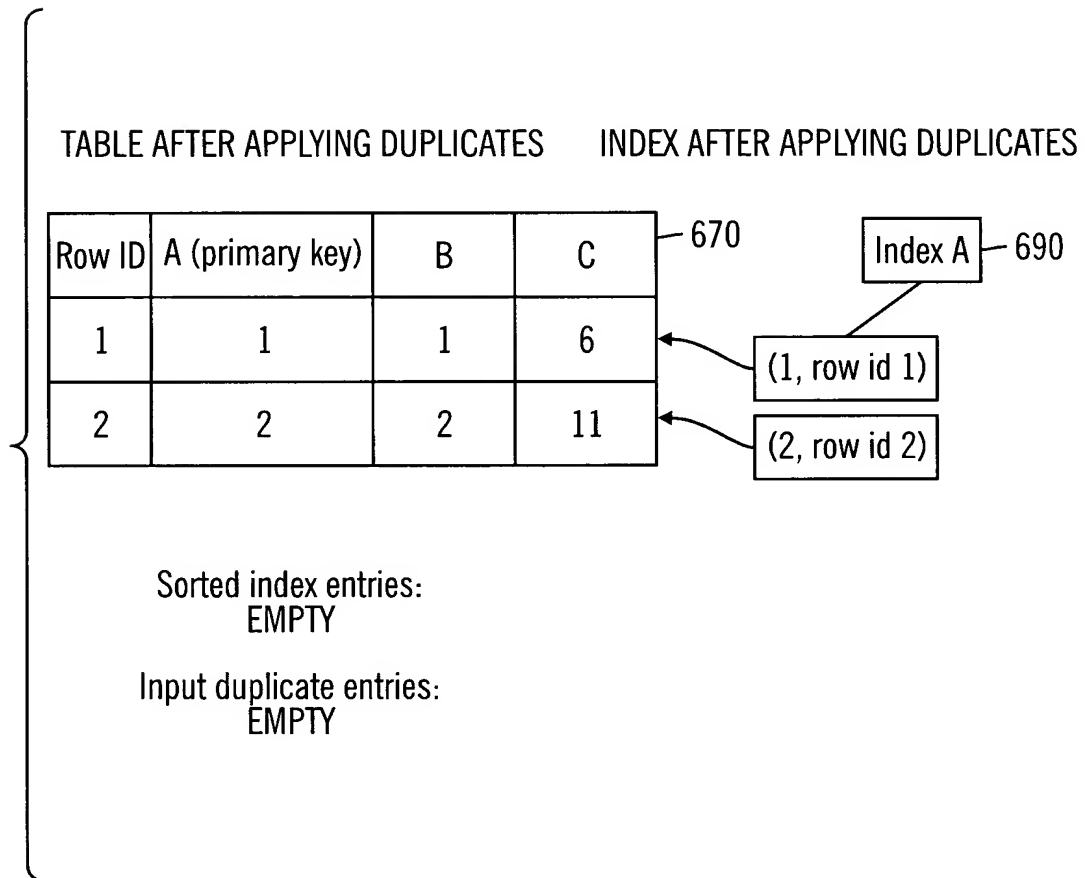
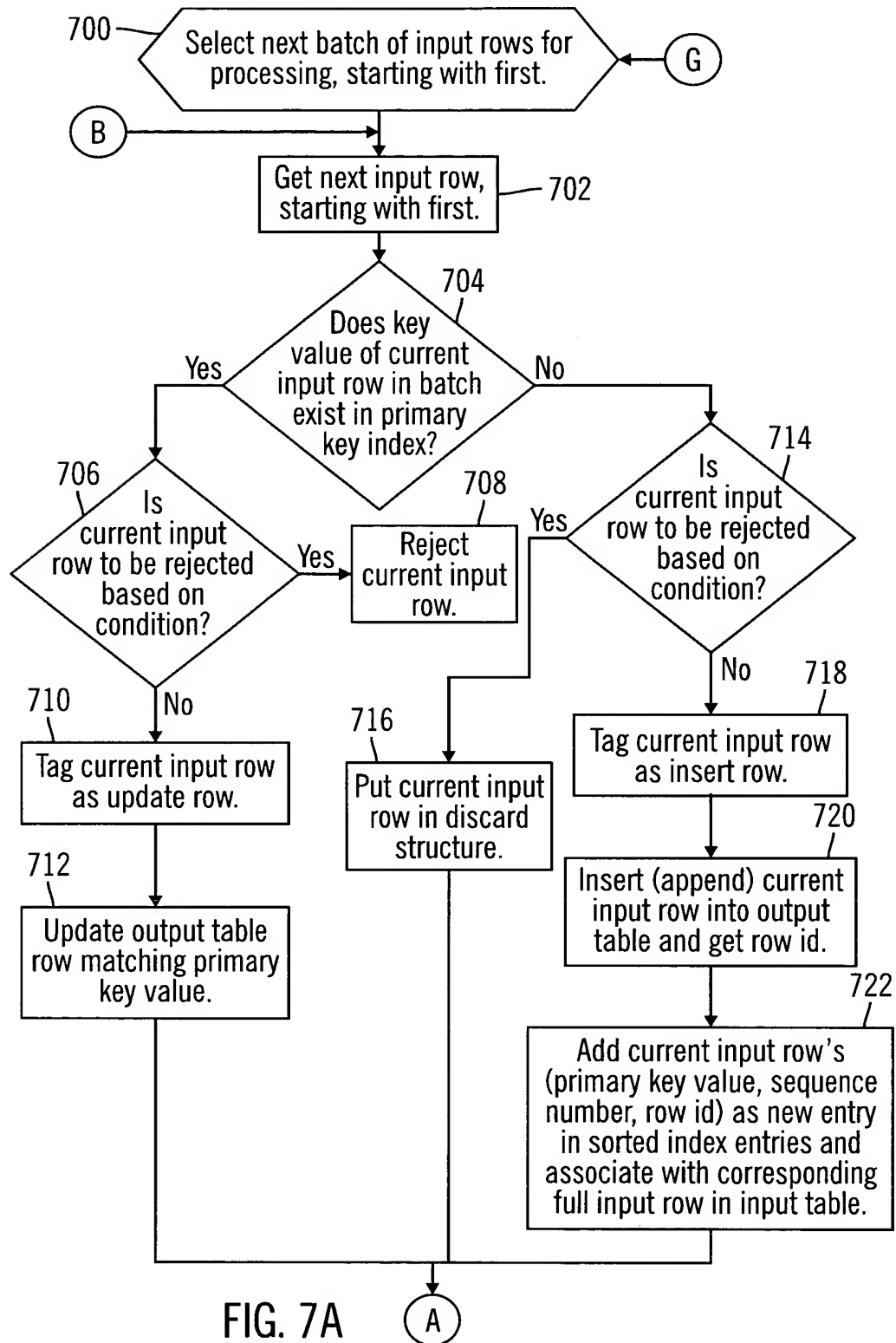


FIG. 6E

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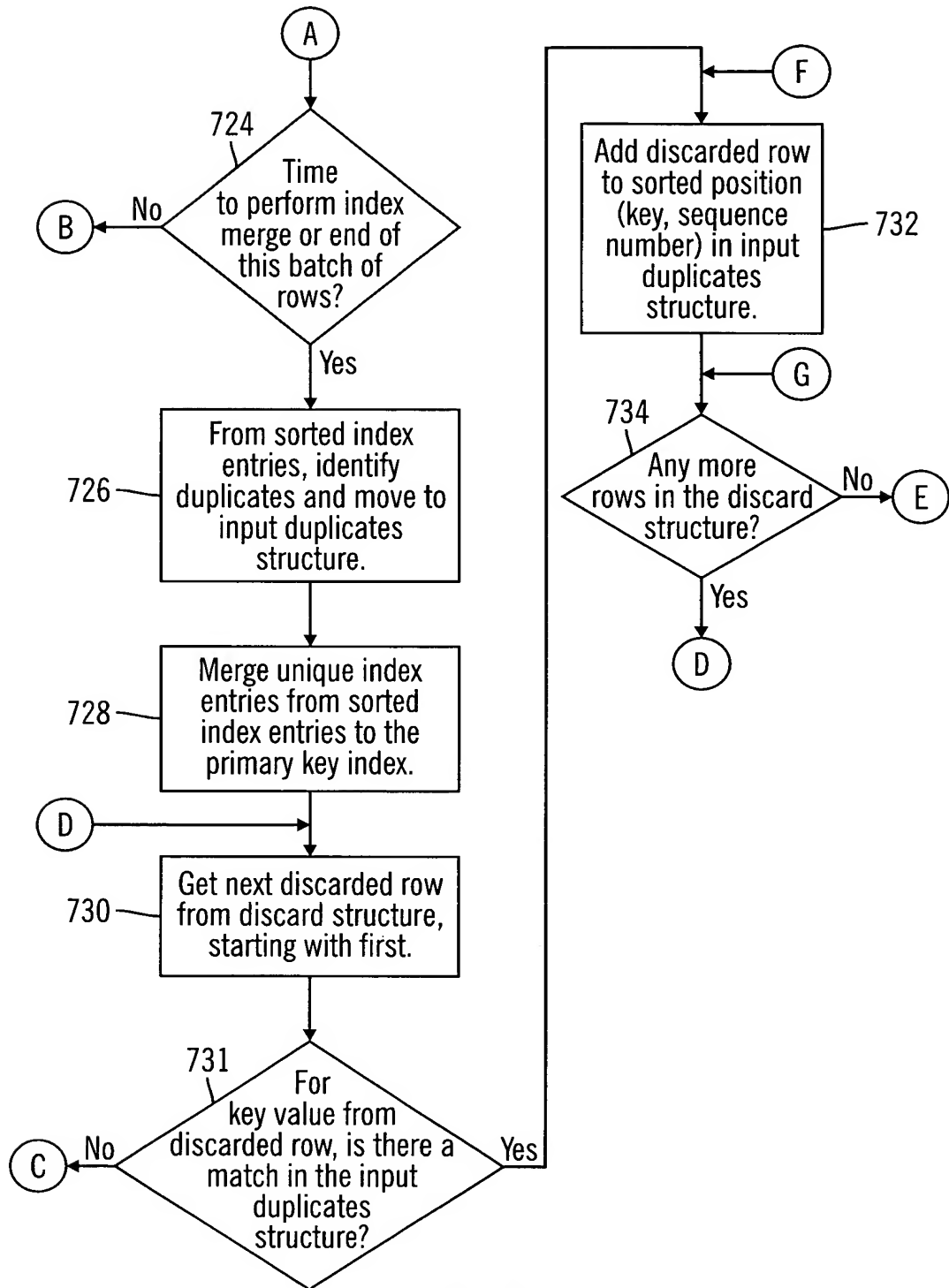


FIG. 7B

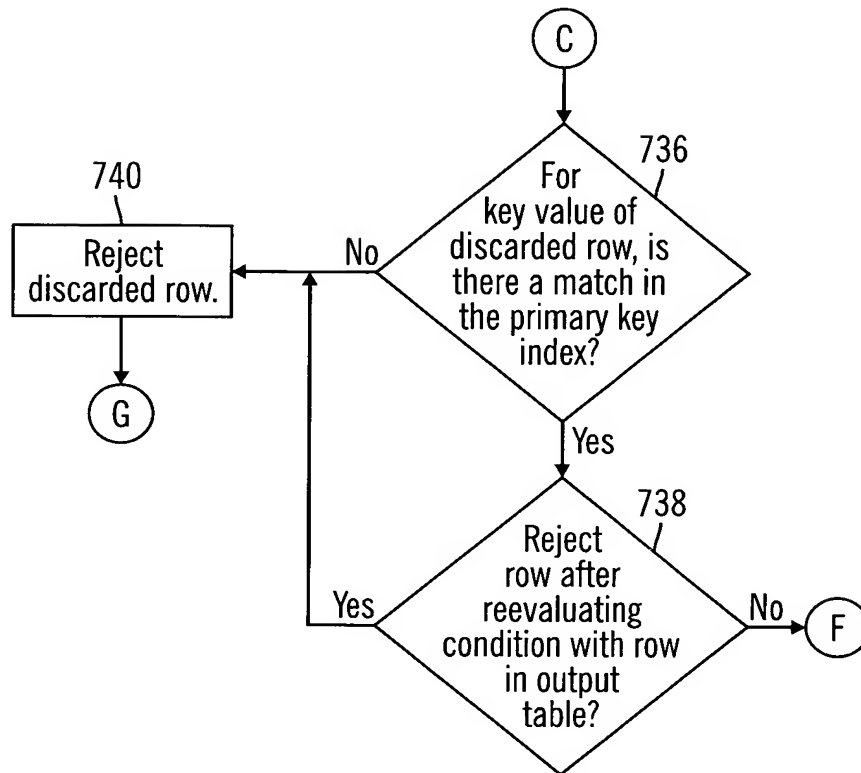


FIG. 7C

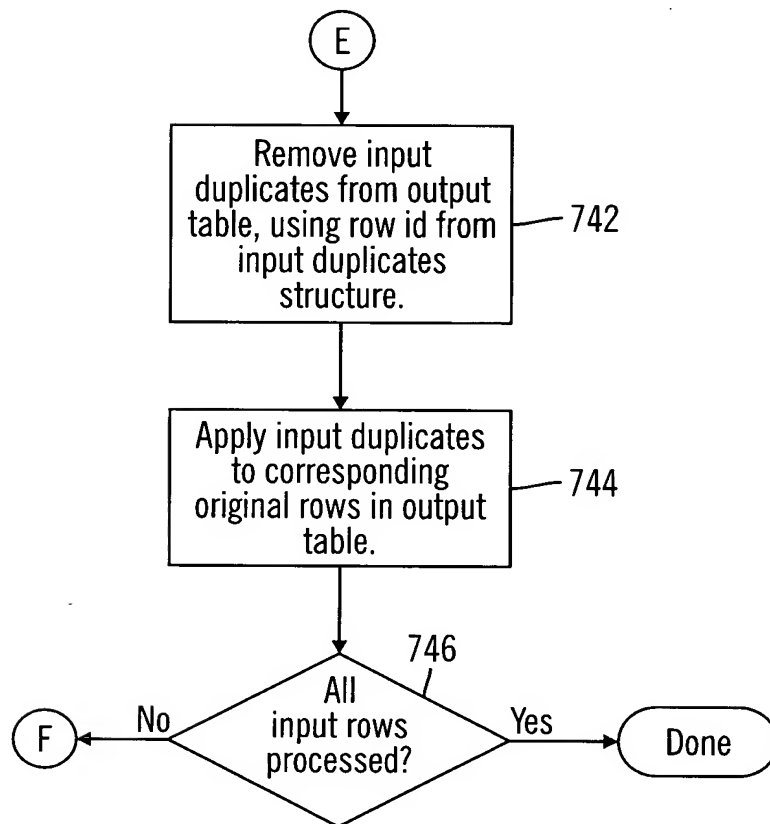


FIG. 7D

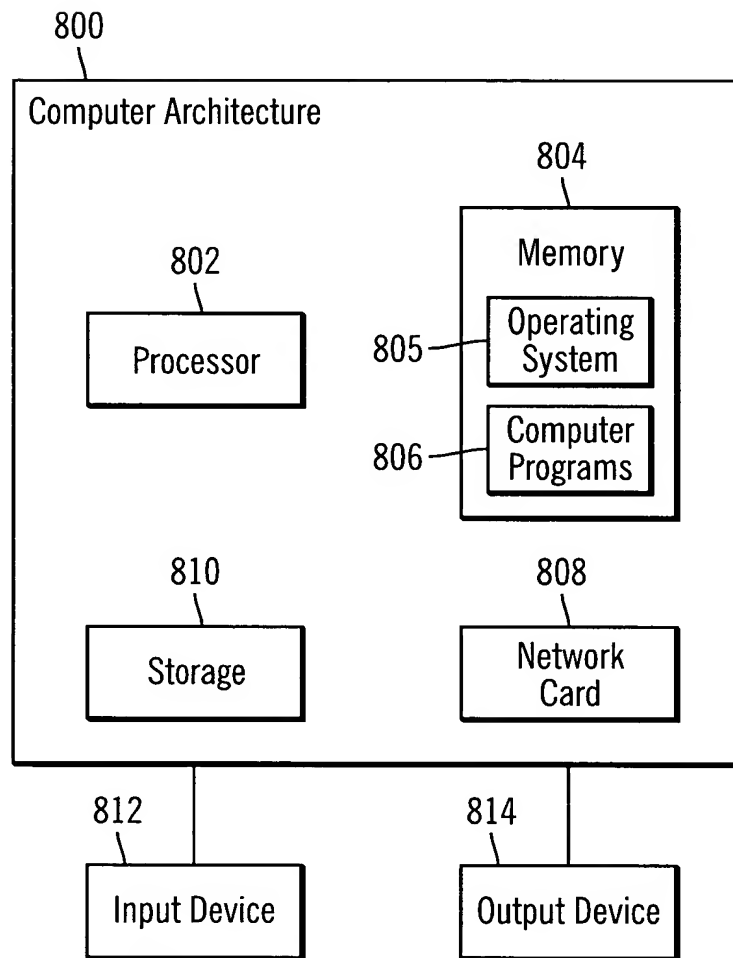


FIG. 8